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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,469	04/13/2004	Sanjeev M. Naik	GP-303757	4574

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EXAMINER	
NGUYEN, XUAN LAN T	
ART UNIT	**PAPER NUMBER**
3683	

MAIL DATE	DELIVERY MODE
07/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,469	NAIK ET AL.	
	Examiner	Art Unit	
	Lan Nguyen	3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

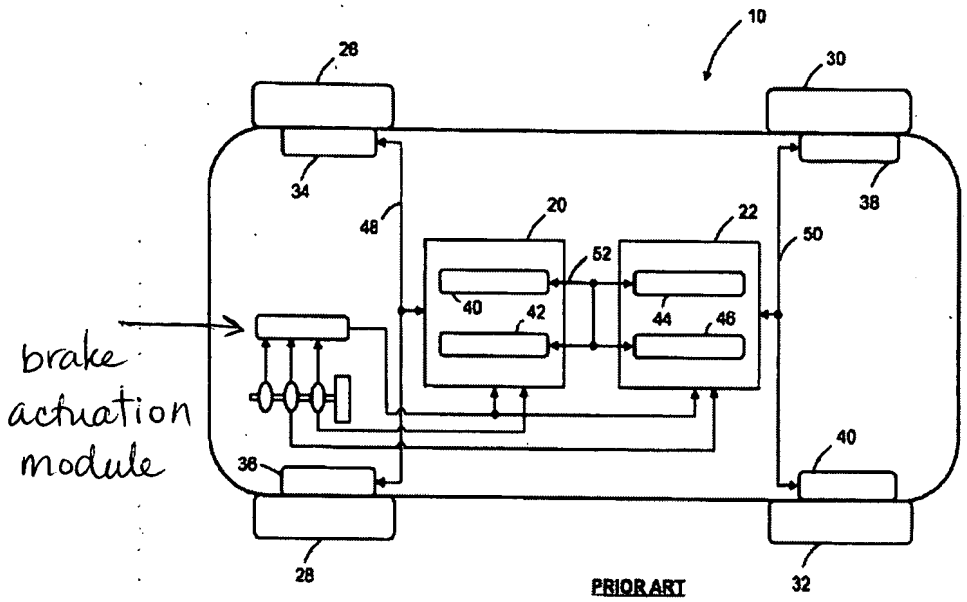
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-12, 17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (from here on will be referred to as AAPA) of Figure 1 in view of Kato et al. (USP 5,548,601) and further in view of Kidston et al. (USP 5,615,933).

Re: claim 1, Figure 1 of AAPA teaches a brake control system, as in the present invention, comprising: a first pair of brake control units 34, 36; a second pair of brake control units 38, 40; a first brake control bus 48 which is operatively connected to each

of the respective ones of said first pair of brake control units; a second brake control bus 50 which is operatively connected to each of the respective ones of said second pair of brake control units; a first supervisor controller 20 which is operatively connected to said first brake control bus and adapted to control each of the respective ones of said first brake control unit pair through said first control bus; a second supervisory controller 22 which is operatively connected to said second brake control bus and adapted to control each of the respect ones of said second brake control unit pair through said second control bus; a controller bus 52 which is operatively connected to each of said first supervisor controller and said second supervisory controller; and a brake actuation module in signal communication and adapted to provide a brake signal to each of the first and second supervisory controllers as marked in figure 1 below. Figure 1 of AAPA lacks a monitoring controller which is operatively connected to said controller bus and adapted to monitor the performance of said first supervisory controller, said second supervisor controller, said first brake control bus, and said second brake control bus. Kato et al. teach the concept of a monitoring controller 80, 85 which is operatively connected to said controller bus Td1, Td2 and adapted to monitor the performance of said first supervisory controller CPU1, said second supervisor controller CPU2, said first brake control bus Td1, and said second brake control bus TD2, as shown in figure 5 and column 7, line 30, in order to improve the ability to detect fault in a brake system to provide more reliable control to the brake system. Kato also shows monitoring controller 80, 85, first and second supervisor controllers CPU1, CPU2, each signally connected to a brake actuation module U in figures 1 and 3 of Kato. Kato further

teaches in column 8, lines 8-12 that the monitoring controller is employed in actual slip control. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Figure 1 of AAPA to include a monitoring controller such as taught by Kato in order to improve the ability to detect fault in a brake system to provide more reliable control to the brake system. AAPA's brake control system, as modified by Kato, lacks a non-bussed, hard-wired connection for the brake actuation module. Kidston teaches the concept of using a non-bussed, hard-wired connection in a brake control system wherein the brake control 66 is connected to the motor control 22 through dedicated lines (i.e. non-bussed, hard wired connection) 60, 62 and 64, especially 64 is designed to carry single bit signal, as stated in column 4, lines 7-15, in order to provide fast and reliable communication. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified AAPA's brake control system to employ a non-bussed, hard-wired connection in order to provide fast and reliable communication as taught by Kidston.



PRIOR ART

FIG. 1

Re: claims 2 and 20, Kato further teaches a brake control cutoff module 90; said module operatively connected by at least one controller signal line, signal line to A (abnormal condition), to said monitoring controller, said module also operatively connected by a first brake control line to said first pair of brake control units and by a second brake control line to said second pair of brake control units as shown in figure 1 of Kato, wherein said brake control cutoff module is adapted to receive a control input

signal from said monitoring controller and selectively provide a control output signal to one of said first brake control unit pair and said second brake control unit pair, and wherein the control output signal comprises a cutoff command to the one of said pairs receiving the control output signal, as shown in column 7, lines 49-54.

Re: claims 3 and 4, Kato further shows the brake control cutoff module comprises a latching relay having embedded control logic to control the latching of the relay in column 7, lines 49-54.

Re: claim 5, Kato shows in figure 1, the at least one signal line comprises a first logic line and a second logic line, and wherein the first logic line may be selectively operatively connected through the control logic to the first brake control line and the second logic line may be selectively operatively connected through the logic to the second brake control line.

Re: claim 6, Kato further shows a brake control cutoff module 90, said module operatively connected by at least one controller signal line to said monitoring controller, shown as signal line to A (abnormal condition), said module also operatively connected by a first brake control line to a first bus control which is operatively connected to said first brake bus and by a second brake control line to a second bus control which is operatively connected to said second brake bus, wherein said brake control cutoff module is adapted to receive a control input signal from said monitoring controller and selectively provide a control output signal to one of said first bus control and said second bus control, and wherein the control output signal comprises a cutoff command

to the one of said first bus control and said second bus control receiving the control output signal, as stated in column 7, lines 49-54.

Re: claims 7 and 8, wherein the brake control cutoff module comprises a latching relay having embedded control logic to control the latching of the relay in column 7, lines 49-54.

Re: claim 9, Kato further shows in figure 1, wherein the at least one signal line comprises a first logic line and a second logic line, and wherein the first logic line may be selectively operatively connected through the control logic to the first brake control line and the second logic line may be selectively operatively connected through the control logic to the second brake control line.

Re: claim 10, Kato further shows a means for selectively disabling one of said first pair of brake control units and said second pair of brake control units in column 8, lines 8-11, said means in signal communication with said monitoring controller, said means connected by a first signal line to and in signal communication with said first pair of brake control units and connected by a second signal line to and in signal communication with said second pair of brake control units, said means adapted to receive a control input signal from said monitoring controller and communicate a control output signal in response thereto to disable one of said first brake control unit pair and said second brake control unit pair.

Re: claim 11, Kato further shows said monitoring controller is adapted to provide a warning indication using warning light 102 to an operator in the event that one of said first brake control unit pair and said second brake control unit pair is disabled.

Re: claim 12, Figure 1 of AAPA in combination with Kato shows said first supervisory controller and said monitoring controller comprise a first fail-silent pair and said second supervisory controller and said monitoring controller comprise a second fail-silent pair in that said monitoring controller is monitoring the performance of the first and second supervisory controller to detect abnormal condition and disabling one of the supervisory controller when an abnormal condition is detected, as stated in column 8, lines 8-11.

Re: claims 21 and 22, Figure 1 of AAPA shows all the claimed features of claims 21 and 22.

Re: claim 17, Figure 1 of AAPA shows a brake control system, comprising: a first pair of brake control units 34, 36, a second pair of brake control units 38, 40, a first brake control bus 48 which is operatively connected to each of the respective ones of said first pair of brake control units, a second brake control bus 50 which is operatively connected to each of the respective ones of said second pair of brake control units; a first supervisory controller 20 which is operatively connected to said first brake control bus and adapted to control each of the respective ones of said first brake control unit pair through said first control bus; a second supervisory controller 22 which is operatively connected to said second brake control bus and adapted to control each of the respect ones of said second brake control unit pair through said second control bus; a controller bus 52 which is operatively connected to each of said first supervisory controller and said second supervisory controller; a brake actuation module in signal communication and adapted to provide a brake signal to each of the first and second

supervisory controllers as marked in figure 1 above. Figure 1 of AAPA lacks the monitoring controller and a cut off module as claimed. Kato et al. teach and a monitoring controller 80, 85 which is operatively connected to said controller bus and adapted to monitor the performance of said first supervisory controller, said second supervisory controller, said first brake control bus, and said second brake control bus; and a brake control cutoff module 90, said module operatively connected by at least one controller signal line to said monitoring controller, said module also operatively connected by a first brake control line to said first pair of brake control units and by a second brake control line to said second pair of brake control units, wherein said brake control cutoff module is adapted to receive a control input signal from said monitoring controller and selectively provide a control output signal to one of said first brake control unit pair and said second brake control unit pair, and wherein the control output signal comprises a cutoff command to the one of said pairs receiving the control output signal, as stated in column 7, line 30 and lines 49-54, in order to improve the ability to detect fault in a brake system to provide more reliable control to the brake system. Kato also shows monitoring controller 80, 85, first and second supervisor controllers CPU1, CPU2, each signally connected to a brake actuation module U in figures 1 and 3 of Kato. Kato also teaches in column 8, lines 8-12 that the monitoring controller would be employed in an actual slip control. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Figure 1 of AAPA to include a monitoring controller such as taught by Kato in order to improve the ability to detect fault in a brake system to provide more reliable control to the brake system. Paragraph

[0018] of AAPA, especially lines 12-17, teaches that the construction of control modules is well known and readily available. Hence, it would be within skills of an ordinary person to employ any of these commercially available control modules.

4. Claims 13, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (from here on will be referred to as AAPA) of Figure 1 in view of Kato et al. (USP 5,548,601), in view of Kidston et al. (USP 5,615,933) and further in view of Weiberle et al. (US 2003/0006726 A1).

Re: claim 13, the brake control system, as rejected in claim 1, lacks the claimed three signals from three sensors of claim 13. Weiberle et al. teach the use of three sensors to provide an accurate detection of the driver's operating braking command in paragraph [0028], lines 1-4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified Figure 1 of AAPA to include a third sensor as taught by Weiberle in order to accurately detect the driver's operating braking command.

Re: claim 18, the brake control system, as rejected in claim 17, lacks the claimed three signals from three sensors of claim 18. Weiberle et al. teach the use of three sensors to provide an accurate detection of the driver's operating braking command in paragraph [0028], lines 1-4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified Figure 1 of AAPA to include a third sensor as taught by Weiberle in order to accurately detect the driver's operating braking command.

Re: claim 19, Figure 1 of AAPA in combination with Kato shows said first supervisory controller and said monitoring controller comprise a first fail-silent pair and said second supervisory controller and said monitoring controller comprise a second fail-silent pair in that said monitoring controller is monitoring the performance of the first and second supervisory controller to detect abnormal condition and disabling one of the supervisory controller when an abnormal condition is detected, as stated in column 8, lines 8-11.

Response to Arguments

5. Applicant's arguments filed 5/7/07 have been fully considered.

- Applicant's amendments and arguments have overcome the 112, 1st and 2nd rejections. Hence, the rejections have been withdrawn.
- The new ground of rejection is due to Applicant's amendments to the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Nguyen whose telephone number is (571) 272-7121. The examiner can normally be reached on Monday through Friday, 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Xuan Lan Nguyen/ 7/1/07
Primary Examiner
Art Unit 3683